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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/023,944	12/21/2001	Tetsuo Hishikawa	392.1737	7691

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EXAMINER

PHAM, THOMAS K

ART UNIT	PAPER NUMBER
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2121

DATE MAILED: 05/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/023,944

Applicant(s)

HISHIKAWA ET AL.

Examiner

Thomas K Pham

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 March 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Response to Amendment

1. This action is in response to request for re-consideration filed on 3/2/2004.
2. New claim 11 filed by the applicant has been entered.
3. Claims 1-10 have been considered but they are not persuasive.
4. In response to applicant's request to provide supporting evident for the "Official Notice" taken the previous rejection of claim 6, Examiner has included prior art (Kono et al. U.S. Patent No. 5,267,142) as presented in the following new ground(s) of rejection.

Quotations of U.S. Code Title 35

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim Rejections - 35 USC § 103

6. Claims 1, 5, 6 and 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,084,372 ("Saylor") in view of U.S. Patent No. 5,267,142 ("Kono").

Regarding claim 6

Saylor shows the invention substantially as claimed having a synchronous control apparatus for controlling a follower element in synchronism with a leading element (e.g., figure 9), comprising: memory storing data on a positional relationship between the leading element and the follower element in synchronism (e.g., figure 9, element 12); acceleration controller

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performing an acceleration control of the follower element between a motion start position preceding the start position of the synchronism and the start position of the synchronism (e.g., figure 8 and figure 9, element 14 and col. 2, lines 20-27, "The move profile ... master axis"); and position controller performing a position control of the follower element based on position data of the leading element and the set positional relationship after the follower element reaches the start position of the synchronism (e.g., figure 8 and figure 9, element 18). Saylor does not specifically show storing data on a start position for starting the synchronism of the follower element and the leading element. However, Kono teaches storing in the registers the values the rotational position of the first spindle 10 after synchronization between the first spindle 10 and the second spindle 20 (see figure 1 and column 6 lines 28-36, "When it is determined ... signal is generated, respectively"). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the storing mechanism of Kono with controller of Saylor because it would provide for future utilization when the absolute value of the difference between stored values of the position becomes equal to or less than an allowable value.

Regarding claim 10

It is rejected for reasons given above for claim 6. Further Saylor shows the control of multiple axes based on the position of a first axis. (e.g., col. 4, lines 55-57, "However, the principles ... two axes"). It would have been obvious to one of ordinary skill in the art at the time the invention was made that the synchronous control apparatus could store data on positional relationships between the leading element and a plurality of follower elements in synchronism, and data on start positions for starting the synchronism of the plurality of follower elements and the leading element so that the plurality of follower elements are independently controlled in

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synchronism with the leading element as this would be an obvious extension of control of one following element per claim 6 to the control of plural following elements as a particular circumstance warranted.

Regarding claim 1

It is rejected for reasons given above for claim 6 since claim 1 is a method analogous to the apparatus of claim 6.

Regarding claim 5

It is rejected for reasons as given above for claim 10 since claim 5 is a method analogous to the apparatus of claim 10.

Regarding claim 11

It is rejected for reasons given above for claim 6 since claim 11 is a method analogous to the apparatus of claim 6.

7. Claims 2-4 and 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saylor in view of Kono and further in view of U.S. Patent No. 5,463,296 ("Fugere").

Regarding claim 7

It is rejected for reasons as given above for claim 6. Saylor does not specifically show said storing means could store data on the motion start position of the follower element, a linear acceleration line is formed based on the data of the motion start position of the follower element and the data on a start position for starting the synchronism, and a velocity of the follower element is controlled to vary along the linear line from the motion start position to the synchronism start position of the follower element. However, Fugere shows the use of varying

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types of velocity profile such as linear ramp up or down (e.g., col. 1, lines 45-52, "For example, ... higher derivatives.") to control motion between two positions and this velocity profile would provide a corresponding acceleration curve. It would have been obvious to one of ordinary skill in the art at the time the invention was made that the various types of velocity profile (such as linear) of Fugere could be utilized to control system motion to the synchronism start position in Saylor as this would provide overall enhanced system flexibility.

Regarding claim 8

It is rejected for reasons as given above for claim 6. Saylor does not specifically show said storing means could store data on an acceleration curve for synchronizing and the acceleration control is performed according to the acceleration curve so that the position of the follower element when the acceleration terminates coincides with the start position of the synchronization. However, Fugere shows the use of varying types of velocity profile such as linear ramp up or down (e.g., col. 1, lines 45-52, "For example, ... higher derivatives.") to control motion between two positions and this would velocity profile would provide a corresponding acceleration curve. It would have been obvious to one of ordinary skill in the art at the time the invention was made that the various types of velocity profile (such as linear) of Fugere could be utilized to control system motion to the synchronism start position in Saylor as this would provide overall enhanced system flexibility. Further, it would have been obvious to one of ordinary skill in the art at the time the invention was made that the storing means of Saylor could store acceleration curve data as this would be but one of many possible system locations which could be utilized to store this information as a particular circumstance warranted.

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Regarding claim 9

It is rejected for reasons as given above for claim 6. Saylor does not specifically show that said storing means could store data on an deceleration curve for deceleration and stop of the follower element, and the follower element is decelerated to be stopped according to the deceleration curve; so that the follower element is brought out of the synchronism. Saylor does show deceleration operation (e.g., col. 8, lines 10 15, " It is understood, ... period"). It would have been obvious to one of ordinary skill in the art at the time the invention was made that a deceleration curve could be stored as this is just a type of acceleration curve and that the follower element could be brought to a stop and hence out of synchronization as this is a well known control goal for elements undergoing deceleration.

Regarding claim 2

It is rejected for reasons as given above for claim 7 since claim 2 is a method analogous to the apparatus of claim 7.

Regarding claim 3

It is rejected for reasons as given above for claim 8 since claim 3 is a method analogous to the apparatus of claim 8.

Regarding claim 4

It is rejected for reasons as given above for claim 9 since claim 4 is a method analogous to the apparatus of claim 9.

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Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner *Thomas Pham*; whose telephone number is (703) 305-7587 and fax number is (703) 746-8874, Monday-Thursday and every other Friday from 7:30AM- 5:00PM EST or contact Supervisor *Mr. Anthony Knight* at (703) 308-3179.

Any response to this office action should be mailed to: **Director of Patents and Trademarks Washington, D.C. 20231**, or **Hand-delivered** responses should be brought to **Crystal Park II, 2121 Crystal Drive Arlington, Virginia, (Receptionist located on the 4th floor)**, or fax to the official fax number (703) 872- 9306.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-3900.

Thomas Pham
Patent Examiner

May 7, 2004



Anthony Knight
Supervisory Patent Examiner
Group 3600